

**Practice: 650 - Windbreak/Shelterbelt Renovation****Scenario: #2 - Thinning****Scenario Description:**

Thinning of selected trees and understory vegetation in a windbreak/shelterbelt is needed to ensure that species composition and stand structure continue to serve their intended purpose. Typical scenario is 1,000 feet. Resource concern is Degraded plant condition-undesirable plant productivity and health.

**Before Situation:**

One thousand feet of windbreak/shelterbelt renovation carried out through manipulating species composition, stand structure, and stocking by the thinning of selected trees and understory vegetation so as to not interfere with the intended purpose. This manipulation does not include pruning.

**After Situation:**

The integrity and function of the windbreak is restored.

**Scenario Feature Measure:** Area of Renovation

**Scenario Unit:** Linear Foot

**Scenario Typical Size:** 1,000

**Scenario Cost:** \$388.12

**Scenario Cost/Unit:** \$0.39

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	\$6.32	10	\$63.20
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	\$56.80	2	\$113.60
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.99	10	\$189.90
<b>Materials</b>						
Herbicide, Triclopyr	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	\$42.84	0.5	\$21.42

**Practice: 650 - Windbreak/Shelterbelt Renovation****Scenario: #3 - Removal, < 8 inches DBH with skidsteer****Scenario Description:**

Windbreak renovation requires the removal of degraded or inappropriate trees or shrubs within a windbreak. This may include removal of entire rows, including stumps or roots, or selected trees/shrubs in order to prepare for the necessary planting of a replacement row within the windbreak, improve the health of the remaining rows, and/or allow for supplemental planting to expand the windbreak. Resource concerns include Degraded plant condition- undesirable plant productivity and health; Livestock Production-Inadequate livestock shelter, Soil erosion-wind.

**Before Situation:**

Reduce wind impacts by renovating 1,000 foot windbreaks or shelterbelts using heavy equipment to remove selected trees with average DBH < 8 Inches. Typically trees and shrubs are cleared by a Skidsteer using a tree shear or saw. All slash material from cutting and pruning is either scattered and crushed, piled and crushed, chipped or removed from the treatment area.

**After Situation:**

Integrity and function of windbreak restored.

**Scenario Feature Measure:** Length of Renovation

**Scenario Unit:** Linear Feet

**Scenario Typical Size:** 1,000

**Scenario Cost:** \$940.87

**Scenario Cost/Unit:** \$0.94

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$43.30	10	\$433.00
<b>Labor</b>						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.65	11	\$249.15
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.72	1	\$258.72

**Practice: 650 - Windbreak/Shelterbelt Renovation****Scenario: #4 - Removal, > 8 inches DBH with dozer****Scenario Description:**

Windbreak renovation requires the removal of degraded or inappropriate trees or shrubs within a windbreak. This may include removal of entire rows, including stumps or roots, or selected trees/shrubs in order to prepare for the necessary planting of a replacement row within the windbreak, improve the health of the remaining rows, and/or allow for supplemental planting to expand the windbreak. Resource concerns include Degraded plant condition- undesirable plant productivity and health; Livestock Production-Inadequate livestock shelter, Soil erosion-wind.

**Before Situation:**

Reduce wind impacts by renovating 1,000 foot windbreaks or shelterbelts using heavy equipment to remove selected trees with average DBH > 8 inches. Typically trees and shrubs are cleared by dozer (D-6 or equivalent) using a brush rake or blade. All slash material from cutting and pruning is either scattered and crushed, piled and crushed, chipped or removed from the treatment area.

**After Situation:**

Integrity and function of windbreak restored.

**Scenario Feature Measure:** Length of Renovation

**Scenario Unit:** Linear Feet

**Scenario Typical Size:** 1,000

**Scenario Cost:** \$2,639.42

**Scenario Cost/Unit:** \$2.64

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Dozer, 200 HP	928	Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included.	Hour	\$187.10	10	\$1,871.00
<b>Labor</b>						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$24.95	11	\$274.45
<b>Mobilization</b>						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$493.97	1	\$493.97

**Practice: 650 - Windbreak/Shelterbelt Renovation****Scenario: #5 - Supplemental Planting, container****Scenario Description:**

Parts of the windbreak being renovated have died. Supplemental plantings of containerized trees/shrubs will improve the effectiveness and longevity of the windbreak. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition -Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter.

**Before Situation:**

Dead trees/shrubs are inhibiting windbreak effectiveness. A one (1.0) acre windbreak/shelterbelt is expanded through the planting of containerized tree and shrub seedlings at a average spacing of 8' (shrubs 4'-6', deciduous/conifer trees 8'-12') within row and 15'-20' between rows. Planting is achieved through hand planting.

**After Situation:**

The integrity and function of the windbreak is restored.

**Scenario Feature Measure: Area of Renovation****Scenario Unit: Acre****Scenario Typical Size: 1****Scenario Cost: \$674.47****Scenario Cost/Unit: \$674.47****Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	\$11.22	6	\$67.32
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.99	7	\$132.93
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$96.24	3	\$288.72
<b>Materials</b>						
Tree, conifer, seedling, containerized, 10 cu. in.	1519	Containerized conifer stock, 10 cubic inches (approx 6" plug), 1.7" x 6"). Includes materials and shipping only.	Each	\$0.53	350	\$185.50

**Practice: 650 - Windbreak/Shelterbelt Renovation****Scenario: #6 - Supplemental Planting, bareroot****Scenario Description:**

Parts of the windbreak being renovated have died. Supplemental plantings of bare root trees/shrubs will improve the effectiveness and longevity of the windbreak. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition - Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter.

**Before Situation:**

Dead trees/shrubs are inhibiting windbreak effectiveness. A one (1.0) acre windbreak/shelterbelt is expanded through the planting of bare root tree and shrub seedlings at a average spacing of 8' (shrubs 4'-6', deciduous/conifer trees 8'-12') within row and 15'-20' between rows. Planting is achieved through hand planting.

**After Situation:**

The integrity and function of the windbreak is restored.

**Scenario Feature Measure: Area of Renovation****Scenario Unit: Acre****Scenario Typical Size: 1****Scenario Cost: \$579.23****Scenario Cost/Unit: \$579.23****Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	\$11.22	6	\$67.32
<b>Labor</b>						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$96.24	2	\$192.48
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.99	7	\$132.93
<b>Materials</b>						
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	\$0.39	150	\$58.50
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	\$0.64	200	\$128.00

**Practice: 650 - Windbreak/Shelterbelt Renovation****Scenario: #7 - Supplemental Planting, machine****Scenario Description:**

Parts of the windbreak being renovated have died. Supplemental plantings of bare root trees/shrubs will improve the effectiveness and longevity of the windbreak. Trees and shrubs planted with a tree planting machine. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart in the row with rows 16 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition - Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter.

**Before Situation:**

Dead trees/shrubs are inhibiting windbreak effectiveness. A one (1.0) acre windbreak/shelterbelt is expanded through the planting of bare root tree and shrub seedlings at a average spacing of 8' (shrubs 4'-6', deciduous/conifer trees 8'-12') within row and 15'-20' between rows. Planting is achieved through machine planting.

**After Situation:**

The integrity and function of the windbreak is restored.

**Scenario Feature Measure: Area of Renovation****Scenario Unit: Foot****Scenario Typical Size: 1,000****Scenario Cost: \$260.93****Scenario Cost/Unit: \$0.26****Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	\$6.37	1	\$6.37
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$23.53	1	\$23.53
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$37.30	1	\$37.30
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.99	5.5	\$104.45
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.65	1	\$22.65
<b>Materials</b>						
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	\$0.09	40	\$3.60
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	\$0.39	33	\$12.87
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	\$0.44	66	\$29.04
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	\$0.64	33	\$21.12

**Practice: 650 - Windbreak/Shelterbelt Renovation****Scenario: #8 - Coppicing, < 50% of the windbreak****Scenario Description:**

Coppicing of selected trees and understory vegetation in a windbreak/shelterbelt is needed to ensure that species composition and stand structure continue to serve their intended purpose. Resource concern is Degraded plant condition- undesirable plant productivity and health.

**Before Situation:**

One acre of windbreak/shelterbelt renovation carried out through manipulating species composition, stand structure, and stocking by the cutting of selected trees and understory vegetation for coppicing and by removing or disposing of slash so as to not interfere with the intended purpose. This manipulation does not include pruning.

**After Situation:**

The integrity and function of the windbreak is restored.

**Scenario Feature Measure: Area of Renovation****Scenario Unit: Linear Foot****Scenario Typical Size: 1,000****Scenario Cost: \$903.92****Scenario Cost/Unit: \$0.90****Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$43.30	8	\$346.40
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.99	5	\$94.95
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.65	9	\$203.85
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.72	1	\$258.72

**Practice: 650 - Windbreak/Shelterbelt Renovation****Scenario: #9 - Coppicing, > 50% of the windbreak****Scenario Description:**

Coppicing of selected trees and understory vegetation in a windbreak/shelterbelt is needed to ensure that species composition and stand structure continue to serve their intended purpose. Resource concern is Degraded plant condition- undesirable plant productivity and health.

**Before Situation:**

One acre of windbreak/shelterbelt renovation carried out through manipulating species composition, stand structure, and stocking by the cutting of selected trees and understory vegetation for coppicing and by removing or disposing of slash so as to not interfere with the intended purpose. This manipulation does not include pruning.

**After Situation:**

The integrity and function of the windbreak is restored.

**Scenario Feature Measure: Area of Renovation****Scenario Unit: Linear Foot****Scenario Typical Size: 1,000****Scenario Cost: \$1,205.70****Scenario Cost/Unit: \$1.21****Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$43.30	12	\$519.60
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.99	7	\$132.93
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.65	13	\$294.45
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.72	1	\$258.72